

nues when it sells more of this service since the IXC would not use ILEC switched access to serve this demand. Only the RBOC interexchange service can use the more efficient switched access arrangement while avoiding the effects of the high price the RBOC charges others for switched access.

22. RBOC pricing can take advantage of these cost differences that result from high switched access prices to capture a larger share of this interexchange business than it could earn but for these effects of high switched access prices. This will be the effect on interexchange service markets if, as discussed above, the RBOC uses interexchange prices to target lower switched access prices at customers likely to shift to CLECs. Any gains from the use of more efficient access arrangements come at the welfare cost of distorting business away from otherwise more efficient IXC suppliers.

23. *Switched Access.* If switched access prices remain above cost, RBOC interexchange services will benefit from artificially lowered marginal costs when selling to customers in its local service region that all carriers serve with switched access. If each additional minute of long distance the RBOC sold reduced its sales of switched access by one minute, the RBOC would have no advantage: its opportunity cost of foregone net revenue from switched access would equal the markup over cost paid by IXCs. If the RBOC expanded interexchange sales by decreasing price, however, the most likely consequence would be that total sales by its competitors would fall by less than the expansion in RBOC sales. As a result, the RBOC's opportunity cost of foregone switched access net revenue typically would be smaller than the markup over cost paid by IXCs.

24. The result will be lower marginal costs for RBOC service if it otherwise is as efficient as IXC service, or an offset to a cost disadvantage if RBOC service otherwise is less efficient. The greater the difference between access prices and cost, the greater the magnitude of this marginal cost bias in favor of RBOC service, and the more the RBOC can expand its share of

interexchange sales beyond what it would earn if switched access were priced at cost.⁴ High switched access prices have the same impact on market shares as would unequal taxes on IXC's and the in-region RBOC.

The Role of Imputation

25. The 1996 Act requires an RBOC to provide in-region interLATA service through a separate subsidiary that imputes tariffed switched access prices to its long-distance prices. This requirement may help provide regulators with useful information about RBOC behavior, but it cannot be counted on to eliminate the effects of high switched access prices described above.

26. Requiring a separate RBOC subsidiary to impute the cost of switched access prices to its service will not, by itself, change the choices the RBOC wants to make to maximize profits. This requirement will affect only how much of the profits show up on the books of the subsidiary and how much on the books of the BOC operating company. Imputation can achieve its intended purpose only if regulators take the additional step of either (a) constraining profits or prices of the local operating company to fully offset additional net access revenue booked when RBOC interexchange service expands, or (2) regulating the prices or profits of the RBOC interexchange subsidiary.

27. Under current interstate price cap rules, an RBOC would not have to reduce prices to fully offset increased switched access profits on the books of the local affiliate. All but one RBOC already has chosen, or proposed choosing, a 5.3 percent productivity factor with no sharing, so increases in booked profits will not force price reductions. In any case, the RBOC might not have to share 100% of any increased profits. The RBOC would have to make some reductions in the carrier common line charge if switched access used by its subsidiary were counted and the

⁴ The RBOC advantage will be greater for calls that terminate as well as originate in its local service region, as the RBOC then self-supplies terminating as well as originating access. This implies that the proposed mergers of Bell Atlantic and NYNEX, and of SBC and Pacific Telesis, will increase the magnitude of the advantage these carriers would enjoy since a larger number and proportion of interexchange calls would both originate and terminate within the expanded local service regions of the merged carriers.

RBOC used its advantage to increase total interstate switched access minutes per line. Such reductions, however, would only partially offset the increased profits booked by the operating company.

28. The other way imputation might change RBOC behavior is for detailed regulation to require either that the subsidiary's long distance average or individual service prices equal or exceed some floor that includes imputed switched access prices, or that the subsidiary's long distance prices be adjusted until the subsidiary shows no more than some specified minimum level of profit. Such regulation would be fraught with difficulties, uncertain, costly, and time-consuming. Furthermore, such pricing floors might not constrain the RBOC in all cases since it need not necessarily price below the sum of its marginal cost and the price of switched access to exercise its advantage.

Effects on the Interexchange Market

29. In this section, I examine the effects in the interexchange market of the RBOCs' unique ability to partially evade high switched access charges. I do not evaluate the impact of RBOC entry itself.

30. One outcome will be a "share stealing" effect – RBOCs will capture a larger share of sales to in-region customers than they otherwise would. The shift of sales will shift net revenues and profits from the IXC's to the RBOCs. Real-world firms often face downward sloping demand curves because of product differentiation and therefore set price somewhat above marginal cost even when they sell in markets that are effectively competitive. IXC's might well need some or all of the lost net revenues to cover fixed costs, and therefore, one must not think the IXC's loss of net revenues necessarily will be a sacrifice of supra-competitive profits. IXC's with substantial sunk investments that cannot be redeployed will be unable to earn their expected returns on these investments, and IXC's may be discouraged from making new sunk investments to maintain or expand capacity. Investments in "brand-specific" product development and marketing are likely to be particularly vulnerable since they will be difficult to redeploy. As smaller firms lose

business, some may cease to be profitable and stop supplying the market.

31. Effects on consumers and welfare will be driven by a variety of factors and forces. An RBOC will wish to set somewhat lower interexchange prices and produce more output than it otherwise would because it sees lowered marginal costs due to the advantage it gains when access prices are high. At the same time, the responses of rival IXC's to lower RBOC prices will be limited by the high access prices charged IXC's, which in turn will limit how much the RBOC will lower prices. RBOC shareholders will gain from the shift of profits since they will need to share with consumers only a limited part of the gains they get from their advantages. Moreover, as explained above, the trade diversion effect may threaten the viability of some smaller IXC's that exercise a potentially important competitive constraint in the market – further reducing the downward pressure on pricing. In addition, if the RBOC is not as efficient as the IXC's, production would be shifted from a more to a less efficient supplier, and that effect would reduce social welfare and could reduce any tendency for prices to fall.

32. The share stealing effect created by high switched access prices itself could affect the productive efficiency of carriers. If exposing a regulated firm to strong competitive pressure increases its efficiency, the advantage the RBOC's gain from high switched access prices could reduce the pressure on them to be efficient by offsetting some disadvantages of being inefficient. The loss of share and disadvantages of the IXC's could reduce their incentives to invest in new technologies and services, reducing their efficiency over the longer term. Although the net impact of such changes are difficult to predict with certainty, they provide additional reasons why the trade diversion effect could reduce welfare.

CONCLUSIONS

33. The Telecommunications Act of 1996 intends to give consumers a wider range of choices, both by lowering barriers to competition in local service, and by setting conditions under which an RBOC may provide interexchange service in regions where it supplies local service. Access charges set above cost will alter the resulting course of competition for both types of services.

One would hope that allowing RBOCs to supply interexchange service would lead to a market test of their efficiency. With switched access prices above cost, the test will confound the effects of their underlying efficiency with the artificial advantages conferred by high switched access prices. Much like their false invitation to CLECs to inefficiently enter the local market, high access charges may invite inefficient entry of ILECs into the interexchange market. One would hope lowering the barriers to local competition would lead to market tests of how local service can most efficiently be supplied. High switched access prices instead are likely to substantially affect the magnitude and types of investments made by competing local carriers.

34. The phenomena I describe include means by which some consumers partially evade high switched access prices and therefore may gain some benefits. These improvements are illusory as they provide only incomplete and imperfect corrections of the distortions of high switched access prices. Lowering switched access prices for all carriers would produce far greater benefits without the offsetting harms. All interexchange carriers, not just RBOCs, would face lowered costs, and competition would insure that more of the gains would be passed on to consumers in the form of lower prices. Consumers' choices among interexchange carriers would not be distorted by attempts to evade high switched access prices. Competing local carriers would be encouraged to make efficient investments and discouraged from making inefficient investments, without denying consumers the benefits of lower prices.

35. The new environment created by the Act of 1996 will increase the impact of high switched access prices on market outcomes. If, and to the extent, the collection of "tax revenue" continues to be necessary to serve social purposes, I urge taxes be sought that are less distortionary than pricing LEC switched access above costs. Using particular prices of particular suppliers as a means of tax collection will increasingly distort market outcomes as more and more aspects of the supply of telecommunications services become subject to competition.

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THE ENDURING LOCAL BOTTLENECK II

Prepared for MCI

by

Hatfield Associates, Inc.

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Executive Summary

The *Telecommunications Act of 1996* facilitates the introduction of local competition in several critical ways. However, even assuming successful implementation of the terms of the *Act* by the Federal Communications Commission and the states, competition will develop only if technology and economics make it feasible. Even if technically and economically feasible, the achievement of competition may take a substantial period of time.

This paper conducts an empirical assessment of the prospect that cable telephony and wireless technology will provide significant competition for Incumbent Local Exchange Carrier ("ILEC") residential services. At the time the *Act* was passed, these two technologies were widely believed to be in the best position to compete. Separate business cases for cable telephony and wireless local loop are constructed and analyzed.

The cable telephony analysis assumes that cable networks are already "fiber rich" or Hybrid Fiber Coax ("HFC"). In the case of fiber rich systems a small amount of investment is required to make the system into an HFC platform capable of supporting telephony. An HFC system is capable of supporting telephony with the addition of customer interface units, host digital terminals and additional power. There are substantial costs involved in converting older generation cable systems to fiber rich systems. These are considered to be video service costs. In other words, cable telephony is treated as an incremental service.

The wireless local loop business case assumes that PCS providers use a High Tier CDMA technology. PCS is selected as the preferred platform because the recent auction winners hold unencumbered spectrum and have a "greenfield" business opportunity. Most of the PCS auction winners have announced that they will use CDMA technology. Wireless local loop

service is assumed to be an add-on to mobility service. This means that most of the cost of building a wireless local loop infrastructure is incremental to mobility services.

The recently announced AT&T system may provide a promising alternative to the technology modeled here. However, that technology is, for practical purposes, still on the drawing board. While the ultimate result may be different, at best, alternative technologies such as that under development by AT&T occupy the same ground as did cable telephony some three or four years ago. It would be a mistake to base public policy decisions regarding local telephone company regulation on such a promise.

Both business cases assume that revenues will be derived from a variety of services, including access and resold long distance. Alternative market penetration and long distance demand assumptions are considered. A key assumption made here is that the prices for the incumbent monopoly telephone services move to cost over time. Potential entrants sinking large amounts of capital into local telephone facilities will make their plans based on the economic costs, rather than the current inflated rates of the telephone companies.

As in the original *Enduring Local Bottleneck* ("ELB I") released in 1994, the findings are that the competitive technologies are technologically viable. However, profitability is far in the future and internal rates of return are relatively low, except in the most optimistic cases. As a result, competition is likely to develop slowly, beginning with the more attractive markets. Residential competition may never become ubiquitous. The conclusion is that regulators cannot assume that widespread facilities-based competition is likely in the near term.

The implications for public policy are significant. Given the already weak case for local residential competition, it is essential that pro-competitive public policy measures are

implemented as soon as possible and are vigorously enforced. Policies premised on the inevitability of local competition are destined to fail. Allowing BOCs to enter the long distance market or deregulating ILEC prices would be premature until significant local competition develops.

At the time *ELB I* was published, the results were in conflict with the optimistic press releases and newspaper reports regarding local competition. As this is written, the press reports about local competition are extremely negative. The correct conclusion is likely somewhere in the middle. Significant local competition may well develop, but pro-competitive public policy, as well as a substantial amount of time, are necessary.

Table of Contents

I.	INTRODUCTION	1
II.	MARKET DEFINITION	5
III.	DEFINING COMPETITION	7
IV.	CURRENT COMPETITION	8
A.	Structure	9
B.	Conduct	11
C.	Performance	12
1.	Profits	12
2.	Pricing	13
3.	Minute Growth	14
V.	MODELING	15
VI.	CABLE TELEPHONY BUSINESS CASE ANALYSIS	18
A.	Study Area	18
B.	The Cable Television Network Upgrade Model	19
1.	Supertrunk Facilities	23
2.	Feeder Facilities	25
3.	Distribution Facilities	27
4.	HFC Network Upgrade Model Results	28
C.	Cable Telephony Investment and Expenses	30
1.	Cable Telephony Architecture	30
2.	Cable Telephony Service Expenses	34
D.	Demand and Revenue Assumptions	38
E.	Business Case Results	42
F.	Cable Telephone Qualitative Factors	45
G.	Cable Data Considerations	46
VII.	WIRELESS LOCAL LOOP BUSINESS CASE ANALYSIS	47
A.	WLL Spectrum and Technology Options	48
B.	Wireless Local Loop Investment and Expenses	53
1.	WLL Network Architecture	55
2.	Incremental Network Capital Costs	58
3.	Wireless Local Loop Expenses	59
C.	Demand and Revenue Assumptions	61
D.	Business Case Results	63
E.	WLL Qualitative Factors	67
1.	Death, Taxes and Dial Tone	67
2.	ILEC Responses To WLL Service Providers	69
3.	WLL In the Marketplace	71
VIII.	CONCLUSION	73

ENDURING LOCAL BOTTLENECK II

I. INTRODUCTION

The Telecommunications Act of 1996 ("*1996 Act*") promotes local competition by reducing state entry barriers and by requiring interconnection, unbundling and resale.¹ Whether or when local markets actually do become effectively competitive is a function of several factors. First, technology and economics must be consistent with a competitive market structure. Second, the interconnection, unbundling and resale provisions of the *1996 Act* must be *implemented* in ways that maximize competitive opportunities.² Finally, and related to the second point, the incentive and opportunity for Incumbent Local Exchange Carriers ("ILECs") to reduce competition through discrimination and anticompetitive pricing must be minimized.

Technology has eliminated, at least to some degree, the natural monopoly characteristics that have prevailed through the history of local telephony. This is especially true for larger business customers. However, even if the *1996 Act* is implemented successfully and anticompetitive behavior eliminated entirely, it may be many years before competitors have an

¹ Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56, *to be codified at* 47 U.S.C. paras. 151 *et seq.* There are additional possible barriers to entry from local governments. See Bryan Gruley, "Detroit Suburb Sparks Fight by Levying Fees on Telecom Concerns," The Wall Street Journal (December 23, 1996), p. A1, and letter from Thomas E. Wheeler, President, Cellular Telecommunications Industry Association, to Michele C. Farquhar, Chief, Wireless Bureau, Federal Communications Commission (January 3, 1997), discussing "abusive activities by state and local governments which are thwarting the build out of a national wireless telecommunications infrastructure."

² This includes the requirement that all ILEC systems necessary for interconnection and unbundling are in place, tested and operating. Even with these changes, there will be additional barriers to entry because competitive local exchange carriers ("CLECs") will have to incur substantial sunk costs to build networks and attract customers.

opportunity to develop sufficiently to constrain the market power of the incumbents.³ The primary focus of this paper is on the potential for full facilities-based local competition for residential customers. As long as the approximately 100 million telephone lines serving residential customers remain firmly in the control of the incumbent local telephone companies, the local telephone market cannot be fairly categorized as competitive.

The original *Enduring Local Bottleneck* (“*ELB I*”), which was completed before passage of the *1996 Act*, addressed the feasibility of local competition developing from three alternative sources: cable telephony, wireless local loops (“WLL”) and competitive access providers (“CAPs”).⁴ *ELB I* concluded that the cost per connection is too high for the technology employed by CAPs to be a competitive alternative for any but the largest business customers. As for cable and wireless alternatives to local telephone company services, *ELB I* found that:

While under certain scenarios the provision of alternative local services will be profitable and yield a positive net present value, they will take 5 to 8 years to generate a positive cash flow and 11 to 15 years to break even. The ultimate profitability of the new entrant is subject to a significant degree of risk.⁵

³ Technology eliminated natural monopoly conditions in the long distance business decades before the market actually became sufficiently competitive to allow substantial deregulation. In 1975, Leonard Waverman demonstrated that scale economies in point-to-point microwave are exhausted at relatively low levels of demand. See “The Regulation of Intercity Telecommunications,” in Almarin Phillips, ed., Promoting Competition in Regulated Markets (1975). AT&T was not declared non-dominant in significant portions of the interexchange market until 1995. See In the Matter of AT&T Corp. Petition to be Reclassified as a Non-Dominant Carrier, 11 FCC Rcd. 3271, released October 23, 1995.

⁴ Economics and Technology, Inc./Hatfield Associates, Inc., The Enduring Local Bottleneck: Monopoly Power and the Local Exchange Carriers (1994).

⁵ *Id.*, p. xix.

In January 1996 Hatfield Associates, Inc. ("HAI") provided a qualitative assessment of technological and market changes since publication of *ELB I*, concluding that

there have been no cost breakthroughs in the technologies available to competitors that would suggest the investment results found in *ELB I* will substantially change. Nor have any hypothetical 'volume production' cost reductions materialized, because these technologies are not yet in mass production.⁶

This Report updates the modeling results for cable and wireless technologies performed in *ELB I*.⁷

This updated analysis finds that entry by cable and wireless operators into local exchange markets remains technologically viable, but highly risky. Under a best case scenario, cable companies deploying residential telephony show a positive cumulative cash flow after seven years. Wireless alternatives fare no better. Initial positive cumulative cash flows also come after seven years, but internal rates of return are lower than in the cable case. In both cases, the 10-year internal rate of return is small compared to the risk involved.

The long lag between entry and profitability and the low expected rates of return suggest that the necessary investment for widespread deployment of these technologies is likely to materialize slowly. Neither cable nor wireless operators are likely to engage in widespread deployment of the competitive technologies. Individual markets will be targeted with further

⁶ See The Enduring Local Bottleneck II: A Preliminary Assessment (January 9, 1996), (*"ELB II Qualitative Assessment"*), p. ii.

⁷ Electric utilities are also potential local telephone market entrants. However, the business case for these utilities is likely to be, at best, comparable to the cable telephony business case. Cable companies already have feeder and distribution facilities carrying video communications. Electric Utilities would have to build complete overlay networks.

deployment initiated only after the technology proves in and demand is established. Ubiquitous local competition for residential customers may never materialize.⁸

As noted earlier, the modeling emphasis of this paper is on cable telephony and wireless alternatives for residential customers. However, the brief update of the progress of the CAPs provided below shows that the market for larger business users can by no means be described as competitive. CAPs are growing rapidly, but the base is small and geographically limited while the market is large.

Three key policy conclusions flow from the finding that the development of full facilities-based local competition is not automatic. First, successful implementation of the unbundling and interconnection provisions of the *1996 Act* is critical. These provisions are designed both to limit discrimination and to allow new entrants to have access to the economies of scale, density and connectivity in the ILEC networks.⁹ Absent effective implementation of these provisions, competition is even less likely to develop. Second, any deregulation of ILEC pricing cannot be premised on an assumption that competition is just around the corner. The ILECs will retain substantial market power and have the incentive to exercise it for many years. Third, given that ILECs will retain bottleneck control over large portions of the local exchange

⁸ AT&T has announced a new fixed wireless technology that has great promise. See John J. Keller, "AT&T Unveils New Wireless System Linking Home Phones to Its Network," Wall Street Journal, February 26, 1997, p. B3. As discussed below in Section VII D, the technology is not yet ready for wide scale deployment, and there are a number of technological and operational issues that must be resolved.

⁹ See, Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, CC Docket No. 96-98, CC Docket No. 96-98, First Report and Order, 11 FCC Rcd 15499 (1996) ("*Local Competition Order*"), para. 11.

into the foreseeable future, there is a substantial risk of discrimination if the RBOCs are granted premature authority to enter interLATA markets.

The remainder of this paper is organized as follows. Section II discusses market definition issues and describes the services being modeled. Section III provides a brief discussion of the competition concept. Section IV summarizes the current state of competition in local telephone markets. Section V provides an overview of the modeling effort that is the primary focus of this paper. Section VI summarizes the modeling results and qualitative considerations for the cable telephony case. Section VII does the same for wireless local loops. The conclusions are summarized in Section VIII.

II. MARKET DEFINITION

The local exchange telephone business consists of separate geographic markets for local calling and for local access within exchange area boundaries.¹⁰ Local access is defined as the origination and termination of calls to and from interexchange carrier networks. The local exchange business can also be usefully divided into business and residential segments. Business and residential customers have different demand characteristics. In particular, businesses often require high-capacity connections for data or to provide PBX trunks. These demand characteristics have implications for the supply side of the market. Some competing technologies may not have the capability of providing the high-capacity connections needed by businesses for data or PBX trunks.

¹⁰ Both *ELB I* and the *ELB II Qualitative Assessment* provide extensive discussions of local telecommunications markets.

For purposes of the analysis to follow, a competitive local service must provide the following to residential customers:

- Single line, single party service allowing subscribers to place and receive telephone calls (POTS); this includes interconnection to other ILECs in the market;
- All complementary and ancillary services provided by the ILEC, including operator assistance, directory assistance, emergency (911) service, telecommunications relay service (TRS), custom calling services such as call-forwarding, Caller ID, etc., and enhanced services such as voice mail;
- The same service quality and reliability as the ILEC;
- The ability to use all of the subscriber's existing customer premises equipment (telephones, fax machines, modems);
- Number portability, and
- A competitive price.

It is also necessary to distinguish between retail and wholesale competition. The *1996 Act* provides for retail competition through two alternative mechanisms. First, retail competitors are allowed to purchase unbundled network elements ("UNEs") at economic cost from the ILEC. So, for example, a firm that can self-provision its own loops may purchase switching from the ILEC in order to provide retail services to customers. Second, retail competitors are allowed to purchase services from the ILEC at wholesale rates that reflect the avoided costs of the ILEC retailing operation.

This study focuses on full facilities-based competition rather than retail competition. Retail competition can obviously provide consumer benefits and facilitate facilities-based competition at the wholesale level. However, in both the UNE and the resale competition cases, the retail competitor is dependent on bottleneck supply of essential inputs by the ILEC. Only

when effective competitive alternatives exist for wholesale facilities such as loops will this dependence, and the consequent need for consumer and competitive safeguards, end.

III. DEFINING COMPETITION

The popular and business press often confuse the concepts of competition and deregulation. The term “deregulation” is often used to refer both to the process of opening entry into a market and to the process of reducing controls over pricing and profits. Unless barriers to entry are low, the first (and maybe only) thing that opening entry does is to change a market from a *de jure* to a *de facto* monopoly. A market becomes competitive only when competitors actually enter and a significant proportion of consumers have an actual choice of suppliers. Deregulation of prices and profits prior to the development of effective competition may actually reduce competitive opportunities. Table I lists various points on the continuum between monopoly and competition.

The industrial organization literature provides a way to measure the extent of competition quantitatively. The Lerner Index defines market power as the difference between marginal cost and the profit maximizing price an unregulated dominant firm would charge. The profit maximizing price depends on the market share of the dominant firm, the supply elasticity of the fringe competitors, and the market elasticity of demand.¹¹ ILECs start with market shares that

¹¹ See David L. Kaserman and John W. Mayo, Government and Business: The Economics of Antitrust and Regulation (1995), pp. 104-109, for a discussion of the relationship among market power, market share, entry barriers and demand elasticity.

TABLE I

Significant Points on the Continuum Between Monopoly and Competition	
De Jure Monopoly	This was the case in local markets in many states prior to passage of the <i>1996 Act</i>
Entry is allowed	Full entry is now allowed
Non-legal barriers to entry have been reduced	Requires full implementation of the <i>1996 Act</i>
Actual entry has occurred	There is very little actual entry for switched local services
A high proportion of customers has a choice of suppliers and a significant number of them have exercised this choice	Not true in any local market
Textbook Competition -- each firm has a small portion of the market	Not likely in the foreseeable future

approach 100 percent. Although legal entry barriers have been addressed, substantial economic barriers to entry into local telephone markets remain. Demand for local services is highly inelastic. Therefore, based on this approach to measurement of market power, the current market situation can only be characterized as highly monopolistic. Section IV discusses additional empirical measures of the extent of market power in the local telephone market.

IV. CURRENT COMPETITION

The *ELB II Qualitative Assessment* documented the state of competition as of the beginning of 1996, and contrasted it with the situation described in *ELB I*. The conclusion at that time was that local exchange competition was taking place mainly in the form of dueling

press releases describing investment *plans*. Little has changed in the market since then. What has changed is that now even the press accounts recognize the substantial barriers to implementing competition.¹²

The *ELB II Qualitative Analysis* demonstrated the lack of competition by analyzing local exchange market structure, conduct, and performance. An update of the evidence in all three categories shows that the ILEC monopoly is still intact.

A. Structure

As was the case a year ago, there is no local market where competitors have obtained a significant share of the local exchange business. Local exchange competition has typically taken the form of “trials” serving limited numbers of subscribers. A handful of actual commercial start-ups has recently been reported in the trade press.¹³

Local access competition is taking place in the central business districts of large cities. The CAP share of the business has grown substantially in percentage terms. However, the CAPs start with such a small base that their total market position is not yet significant.¹⁴

¹² See, e.g., David Lieberman, “Small Step to Riches Has Become Costly Leap of Faith,” USA Today (October 14, 1996), p. 1A.

¹³ See, e.g., Vince Vittore, “TCI Dials Up Telephony in Ill.,” Cable World, (January 20, 1997), p. 1. Experience in Rochester was discussed in the *ELB II Qualitative Analysis, supra.*, note 6, p. 10.

¹⁴ At the time *ELB I* was completed in 1994, MCI reported that less than one percent of its access expenses were paid to CAPs. That number has now approximately doubled (including purchases from MCI Metro). Even if this rapid rate of growth can be sustained, it will take some time before the CAPS attain a significant market share.

At the beginning of 1996, with few exceptions, CAPs were providing exchange access only. Prior to passage of the 1996 Act, some CAPs had negotiated interconnection agreements, which allowed them to provide local switched traffic. The number of agreements has increased and will increase dramatically as arbitrations under the Act are completed.

This means that the number of businesses that have access to an alternative supplier of service is growing. The key point to remember about CAPs, however, is that they do not serve cities or even neighborhoods within cities. They serve individual buildings. The process of making the local market competitive building by building will take a long time. It is often difficult and expensive to add a building to a CAP fiber route even if the building is located nearby.¹⁵ There are an estimated 4.6 million commercial buildings in the U.S.¹⁶ The three largest CAPs serve a total of 5,650 buildings with their own facilities.¹⁷ Nevertheless, with successful implementation of the unbundling and interconnection provisions of the *1996 Act*, the number of large businesses with competitive alternatives will likely continue to grow. However, even with loop unbundling at economic cost, the CAPs remain at the mercy of the ILEC for provisioning and maintenance, and at the mercy of continued regulatory oversight to ensure efficient pricing of interconnection and unbundled network elements.

¹⁵ See "Testimony of Robert A. Mercer on Behalf of AT&T Communications of Illinois," Illinois Commerce Commission, Docket No. 94-0048 (August 8, 1994).

¹⁶ U.S. Energy Information Administration, Commercial Building Characteristics, www.eia.doe.gov (1995). The number of office buildings is 712,000.

¹⁷ See Merrill Lynch, Teleport Communications Group (November 13, 1996), p. 2 (Teleport and MFS have, respectively, 2,800 and 2,500 directly connected buildings) and Goldman, Sachs & Co., et al, Hyperion Telecommunications, Inc. Prospectus (October 11, 1996), p. 24 (1,101 directly connected buildings).

A limited number of states required loop unbundling prior to the passage of the *1996 Act*. There has been substantial growth in the number of unbundled loops measured in percentage terms because the CAPs started out with a base of zero. Overall market impact is still not substantial. For example, Robert G. Harris and David J. Teece report that CAPs in Michigan had procured 15,162 unbundled loops from Ameritech by November 1996, up from only 918 in September 1995 -- an impressive rate of growth.¹⁸ However, as of December 31, 1995, there were almost 6.2 million switched and special access lines in Michigan.¹⁹ This means that substantially less than one half of one percent of all provisioned loops were sold on an unbundled basis. Ameritech provided 5.5 million of these lines.²⁰ Merrill Lynch points out that the success of Brooks Fiber in Grand Rapids, Michigan may be due in part to the fact that Ameritech is a "willing accomplice . . . who we think would gladly trade share loss in Grand Rapids for long distance authority in Michigan, and thus has been more willing to rapidly provision unbundled loops to Brooks' than other ILECs in other markets have proven to be."²¹

B. Conduct

If the ILECs truly feared the entry of full facilities-based competitors, they would have an economic incentive to sell unbundled network elements in order to retain as much business as possible. In many cases, the ILECs failed to reach voluntary agreements to sell facilities to

¹⁸ See Joint Affidavit on Behalf of Ameritech Michigan, In the Matter of Application of Ameritech Michigan Pursuant to Section 271 of the Telecommunication Act of 1996 to Provide In-Region, InterLATA Services in Michigan (December 23, 1996), p. 25.

¹⁹ See FCC, Statistics of Common Carriers (1995/1996 Edition), p. 23.

²⁰ *Id.*, p. 150.

²¹ See Merrill Lynch, Brooks Fiber Properties, Inc. (January 6, 1997), p. 15.

companies seeking to enter the local exchange business. Most of the voluntary agreements were reached with CAPs, whose markets are narrow. Companies like AT&T and MCI, which are seeking to enter the market more broadly using resale or unbundled network elements, have had substantial difficulty negotiating voluntary interconnection agreements. Therefore, state regulators are forced to arbitrate interconnection terms and conditions.

C. Performance

The pricing and profit performance of the ILECs demonstrates their market power. Profits continue to rise, while prices continue to hover close to the Federal Communications Commission's ("FCC's") price caps. Despite high prices and rising profits, ILEC switched access minutes continue to grow.

1. Profits

As Table II shows, RBOC returns on equity has grown each year since 1991. RBOC returns on equity have exceeded the return for the S&P 500 and have risen despite the downward trend in interest rates.²²

²² Also see Mark N. Cooper, Excess Profits and the Impact of Competition on the Baby Bells (September 1996).

TABLE II

RBOC Profit Performance -- Return on Equity					
Year	1991	1992	1993	1994	1995
RBOC Total	13.1%	14.7%	16.6%	16.9%	19.7%
10-Year Treasury Note	7.7%	7.0%	5.9%	7.1%	6.8%
S&P 500	8.8%	10.7%	12.2%	15.9%	16.4%

Source: Company Annual Reports, excluding effects of accounting changes and one-time charges.

2. Pricing

Competition has not constrained ILEC prices. As the following Table shows, interstate switched access and trunking prices remain close to the FCC prescribed maximums. The Price Cap Index ("PCI") is the maximum allowed by the FCC's price cap rules, while the Actual Price Index ("API") reflects actual ILEC pricing. The Hatfield Model shows that current access prices are well above economic costs.²³ Therefore, these numbers show that regulation, and not the market, is constraining ILEC prices.²⁴

A similar story is told by the use of pricing flexibility already granted to the ILECs by the FCC. The FCC's price cap rules also permit density zone and volume discount pricing for services allegedly subject to competition. However, in many cases this authority has not been exercised, suggesting the lack of a pervasive competitive threat.²⁵

²³ See Hatfield Model, Version 2.2, Release 2 (September 4, 1996).

²⁴ These results are similar to previous years. See, Affidavit of A. Daniel Kelley, U.S. v. Western Electric Company, Inc. and American Telephone and Telegraph Company, C.A. No. 82-0192 (December 1, 1994), p.18.

²⁵ See Comments of MCI, Access Charge Reform, CC Docket No. 96-262, filed January 29, 1997, pp. 48-52.